STUDENT ACHIEVEMENT AND MEASURES OF FINANCIAL SUPPORT FOR PUBLIC SCHOOLS IN OKLAHOMA

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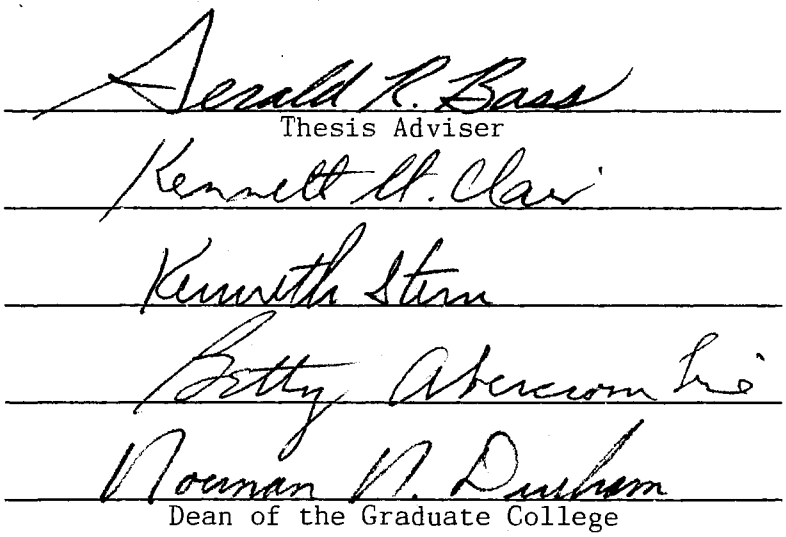

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CHAPTER I

INTRODUCTION

In recent history, education has never enjoyed the amount of national attention that is now evident. Many educators trace this phenomenon back to the establishment of the President's National Commission on Excellence in Education (1983) and the ensuing report, A Nation at Risk, which was written in response to public unrest over the declining test scores of the nation's public school students. Although written in 1983, some experts (i.e., Stedman & Kaestle, 1985) state the report was about five years too late because test scores had already begun to take an upswing in the late 1970s. A Nation at Risk contained many recommendations for educational reform, but the one component most acted upon was the call for a standard of testing to ensure that the nation's public school students acquire competence in the basic skills (Stedman & Kaestle, 1985).

Although many achievement tests showed decline in the median/mean score in the decade from 1965 to 1975, the test scores most often quoted were those of the Scholastic Aptitude Test (SAT), which is administered primarily for evaluation of entrance qualifications into a college or university (Stedman & Kaestle, 1985). Interestingly, the SAT is not an achievement test at all, in the sense that it is not tied to any defined curricula.

Other barometers of declining achievement included the American

College Testing Program, Minnesota Scholastic Aptitude Test, Iowa Test of Basic Skills, Iowa Tests of Educational Development, Comprehensive Tests of Basic Skills, and the National Assessment of Educational Progress (Harnischfeger & Wiley, 1976). Regardless of the test construction or purpose, the decline in test scores became the catalyst for a growing concern among the nation's critics of the public schools.

The attention to the decline in test scores led to an avalanche of educational reform proposals in Congress and in the state legislatures (Vlanderen, 1980). Reform efforts at the federal level included the formulation of various commissions and the reorganization of several governmental functions related to the statistical assessment of educational progress (Vlanderen, 1980).

State proposals for educational reform, however, have had the greatest impact on public school education (Logar, 1984). Although the effort, direction, and success of educational reform have varied among the states, almost all have contained some provision for minimum competency testing of students. Many legislators saw the potential of minimum competency testing for data collection to not only assess the achievement of the students within their state, but to provide input for use in decision-making involving funding and other legislative matters. One prominent application of such data focused upon increased graduation and promotion requirements, some of which are being challenged in the courts today.

The Oklahoma Legislature, although not among the first to enact minimum competency legislation, followed the lead of other states by charging the State Department of Education with the task of formulating

and implementing the School Testing Program. House Bill 1480 (Oklahoma, 1985a) mandated the preparation of a plan by the State Department of Education to include:

1. definitions of various components of the testing program;
2. estimated costs of the program;
3. grade level to be tested and timelines for implementation;
4. procedures for implementation at the state and school district level;
5. suggested tests to be utilized whereby data will be consistent statewide;
6. reporting procedures by school districts to the State Department of Education;
7. anticipated benefits which can be achieved through the Oklahoma School Testing Program (Oklahoma, 1985b, p. 4).

This bill became law in the First Regular Session of the Fortieth Oklahoma Legislature in 1985. The timeline, use of test results, and other factors of implementation were outlined in Section Seven of the law.

> Beginning with the 1985-86 school year, the [State] Board [of Education] shall cause a norm-referenced test to be administered to every student enrolled in grades three, seven and ten of the public schools of this state. Children who have individualized education plans pursuant to Public Law 94-142 shall not be subject to the provisions of the Oklahoma School Testing Program Act. The test used shall be selected by the Board and shall measure specific skills represented by learner objectives. The student skills to be tested at the specified grade levels shall include reading, mathematics, language arts, communications, science and the principles of citizenship in the United States and other countries through the study of the ideals, history and government of the United States and other countries of the world, and through the study of the principles of democracy as they apply in the lives of citizens. The Board shall seek to ensure that data yielded from the test is utilized at the school district level to prescribe skill reinforcement and/or remediation by requiring school districts to develop and implement a specific program of improvement based on the test results (Oklahoma, 1985b, p. 6).

Along with the renewed emphasis on test scores, there appears to be a continued interest in the funding for education, a subject

that is almost always associated with the quality of education. According to Hertling (1986), there is a long-standing debate among educators, politicians, and laymen about the relationship between the level of funding for education and student performance. Although the question continues to be studied, it is obvious that the relationship between funding and achievement is a relevant issue in determining equity in educational programs.

Oklahoma's funding formula is comprised of three different tiers (Augenblick & McGuire, 1983). The first tier is the foundation program that guarantees a specific amount of revenue for each pupil and provides the difference between the total revenues guaranteed and the revenue generated by a specific set of local sources, including the 15 mill local property tax, a county property tax, vehicle license fees, and the gross production tax on mineral extractions. The second tier is described as an incentive aid program. This tier guarantees a per-pupil revenue level for each mill of local tax effort up to 20 mills beyond the 15 mill effort required in the foundation program. The third tier contains all state aid programs that do not consider the local wealth of local school districts in the allocation mechanism. Also included in this segment is a built-in sensitivity to district size.

Another financial factor which must be examined when looking at Oklahoma's method of funding is the effect of local wealth. Local wealth is best determined by net assessed valuation per pupil. This factor is shown to have a disequalizing effect on funding among districts, especially in the second tier of the funding formula

(Hornbostel, 1985). For this reason there is a need to examine the relationship between local wealth and student achievement.

It is evident that Oklahoma's method of funding public schools is complex. Considering the unique method of funding for the public schools and the ability to use a common measure of student achievement for all districts, it seems timely to study the possible relationship.

Purpose of the Study

The purpose of this study was to examine the relationship between student achievement and measures of financial support for Oklahoma public schools. Analysis was conducted to determine if there was a significant relationship between student achievement in grades 3, 7, and 10, as measured by the Metropolitan Achievement Test and district revenue per pupil in average daily attendance (ADA), district wealth in net assessed valuation per pupil (ADA), district size (total ADA), and student socio-economic status as the percent of students participating in the National School Lunch Program of the school district. The population and sample included all 456 independent school districts in Oklahoma.

Hypotheses

The null forms of the basic hypotheses for testing are as follows:

1. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and independent school district revenues per pupil in average daily attendance (ADA).

2. There is no significant relationship between the total school

district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and the level of local school district wealth as measured by net assessed valuation per pupil in average daily attendance.

3. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and the size of the individual school district as measured by average daily attendance.

4. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and the socioeconomic status of students as measured by the percent of district students who participated in the National School Lunch Program of the individual school districts.

Limitations

This study was limited to the population of the 456 independent school districts in the State of Oklahoma. Further it was limited to only one calendar school year, one achievement test, and three grades. The study was limited to district mean scores and not to individual student test data.

Significance of the Study

As a result of national attention to the declining test scores on the standardized tests of the nation's public school students, the Oklahoma Legislature has mandated the implementation of a statewide school testing program to assess student competencies in the areas of

reading, mathematics, language arts, communications, science, and the principles of citizenship in the United States and other countries through the study of the ideals, history, and government of the United States and other countries of the world, and through the study of the principles of democracy as they apply in the lives of citizens (Oklahoma, 1985b).

Clearly, a variety of factors are attributable to the levels of achievement on standardized test scores. Financial support is certainly one of the variables which is of interest to the state legislature. Researchers in Oklahoma have in the past been restricted in their ability to study the relationship between the state's method of funding for public education and the achievement of students as measured by standardized tests, primarily because of the lack of common test data. In 1986, for the first time, a common test was administered to nearly all of the 3rd, 7th, and 10th grade students in the 456 school districts in the State of Oklahoma.

By determining the relationship between public school funding in Oklahoma and achievement levels of its students, policymakers will be able to enact effective funding legislation which will enable them to address equity issues among its school districts.

Definition of Terms

Oklahoma School Testing Program: Established by the legislature, the Oklahoma School Testing Program requires the use of norm-referenced tests designed to measure student performance on selected minimum competencies in the areas of reading, mathematics, language arts, communications, science, and the principles of citizenship in the

United States for grades 3, 7, and 10. The test selected by the State Department of Education for use in 1986 was the Metropolitan Achievement Test (50th Anniversary Edition).

Standardized Norm-Referenced Achievement Test:

> Standardized achievement tests are carefully developed to include measurement of objectives common to many school systems. They measure knowledge of facts, concepts, and principles. An individual's level of achievement is compared to the norm, or average score, for his or her grade or age level (Gay, 1981, p. 108).

Norm Group: A randomly selected group considered to be performing at an average level according to grade placement.

Local Wealth: The local wealth of a district will be the per capita net assessed valuation of the school district.

Percentile Rank: The percentage of scores in the distribution that focus at or below a given score.

Independent School District: Independent school districts are those political subdivisions created to be fiscally independent agencies which operate a K-12 public school system, governed by a locally-elected board of education.

Socioeconomic Status: Socioeconomic status has been determined in this study by the percent of students eligible for and participating in the National School Lunch Program as reported by independent school districts.

Summary

Issues related to equity of funding for Oklahoma public schools have long been controversial among educators and legislators in this state. Along with funding, maintenance of an appropriate school size

has been debated at length. This study has been designed to determine if there is a relationship between student achievement in the State of Oklahoma and school size, local wealth, per-pupil revenues, and the socioeconomic status of students.

Chapter II contains a review of pertinent literature. Chapter III describes the design and methodology that were used in gathering and analyzing data for the study. Chapter IV contains a presentation and analysis of the data, while the final chapter summarizes the findings of the study, suggests relationships based upon the findings, and makes recommendations for further research.

CHAPTER II

REVIEW OF LITERATURE

This chapter will include a review of the literature related to achievement testing and the funding of American public education. The first portion focuses on testing, including a review of its history, relationship to achievement, perceptions of testing, and the decline of American students' test scores. The second segment contains information describing school wealth, how schools are funded, why schools vary in wealth, and how school district wealth is measured. The final section of this chapter examines the relationship between school district wealth and student achievement.

Testing

"We've a splendid testing system. If you'd like it I shall
list 'em,"
Said the city superintendent with a holy little smile.
"We measure kids and test kids to see what things infest
kids,
And then repeat the process every little while."

"We give grammar tests and hammer tests and also
Katzen-jammer tests,
And German tests and vermin tests, the best we can compile,
Appreciation, condensation, information, lucubration,
To say nothing of vocation--Oh, a tall, tall pile."

"Our tests are often mental, but they may be merely dental
Or sometimes environmental (about the domicile).
Versatility and ability, then utility, then debility--
With indefatigability we choose the latest style.

"Constitution, restitution, home pollution, destitution

GO-to-college, moral knowledge--just wait a little while;
Aptitudes and attitudes but seldom the beatitudes
For measurement of platitudes serves only to beguile."

"Physiology, sociology, entomology, and geology,
For present-day psychology says these things we should
compile;
Metaphorical and clerical, historical, hysterical,
Our tests are quite numerical, and very much worthwhile."

"Spelling tests and yelling tests--no, I'm not selling tests,
But schools that seldom use them are very, very vile.
We give our tests, record our tests (I wish we could afford
more tests)
And I keep them--keep them--in a great, large file"
(Black, 1963, p. 26).

The growth and influence of mass testing in the United States have been among the most important post-World War II developments in education (Black, 1963). Educational testing was assumed to focus on the identification and sorting out of those few eligible candidates who would complete the secondary academic program and then be admitted to higher education (Bloom, Hastings, & Madaus, 1971). According to Hersey, however, testing became a major weapon in the cold war (Black, 1963).

As a result of this historic affinity for testing, more than ever before our nation relies heavily upon standardized testing to quantify every strata of our modern existence. Testing enables us to measure statistically and to qualify ourselves with relative merit and ultimately to judge our global position.

Modern standardized testing has become more prolific and its value more utilitarian. Policy makers use test data to formulate funding practices and to justify educational reform. For us, "Testing has become a way of life that can start shortly after the cradle and may end just this side of the grave" (Black, 1963, p. 9).

Although experts differ about the origin and development of standardized testing, the uses and structure of testing have evolved dramatically over the years. Early formal procedures for examinations date from about 1115 B. C. By the time of the ancient Greeks, the affiliation between testing and the education of the young were highly developed and refined (Chauncey & Dobbin, 1963). According to McArthur (1987), timed written tests were used for the purposes of determining eligibility for graduation as early as 1702.

Horace Mann's advocacy of written examinations, in 1845, was instrumental in bringing the process to primary and secondary schools in the United States (Ebel, 1972). The early testing systems were used to place students from grade to grade, replacing the teacher's judgment as the sole criteria for placement. Mann stated that written exams would allow teachers to obtain more evidence regarding achievement and not be so prone to bias and favoritism. Although Mann's viewpoint of testing was not labeled as totally objective, it leaned toward a bias for standardized tests.

In the late 1800s, Sir Francis Galten and James McKeen Cattell were major figures in the early attempts to classify individual differences through the development of formal testing procedures (Chauncey & Dobbin, 1963). The emerging science of psychology led to the use of tests to classify school pupils so that the dullest of them could be separated from the other students for special instruction. Some of the early tests included things such as skull measurement, strength of grip, speed of tapping, speed of reaction, sensitivity to touch, and keenness of vision and hearing. These attempts at selective testing were proven to be unreliable at best.

Even from its early existence, testing was questioned as a means for grade placement (McArthur, 1987). In 1881, the superintendent of the Chicago schools expressed a strong aversion to testing for placement. Testing for purposes of grade-level advancement was thus prohibited in that district. Grade placement was carried out through direct teacher/principal recommendations.

The first academic achievement test was developed by J. M. Rice in 1897. It was a spelling test which consisted of 50 words and was administered to 30,000 students in grades four through eight. Rice found an unexpected wide variation in results (Wilds & Lottich, 1970). He subsequently developed additional tests to determine content reliability. His efforts were considered a pioneering effort to establish standardized achievement tests based on an objective and scientific assessment of knowledge (McArthur, 1987).

At the end of the 19th century, Charles W. Eliot, President of Harvard, proposed that a board be established to determine the readiness of secondary students to attend college (Ebel, 1972). The College Entrance Examination Board developed tests, in lieu of the former course requirements, to compare students from the different schools. With this system of testing, the colleges were able to determine the relative educational preparation of students from public as well as private schools.

In 1904, the French psychologist Alfred Binet was asked to work on methods of identifying children who could not benefit from regular school instruction. Binet constructed a simple test in which students were asked to complete skills which were common to all of the same

culture, such as recognizing coins, naming the months, and other mundane tasks. Binet concluded that the intelligence of students could be determined by observing their abilities to perform, in a structured setting, tasks similar to those they confronted in their daily lives (Chauncey & Dobbin, 1963). Dr. Lewis Terman, at Stanford University, revised the Binet test by preparing new questions and new norms. This instrument, known as the Stanford-Binet, gained wide acceptance and quickly became the most common American intelligence test.

In 1913, the National Council on Education published an important document concerning standards and tests for measuring school efficiency. This report emphasized an over-riding consensus that it was now possible to accurately describe the accomplishments of students based on the application of mathematics to measurements in education (McArthur, 1987).

However, it was not until 1917, as the country began preparing for World War I, that the use of psychological and educational tests began to be more common throughout the nation (Cronbach, 1975). Binet's tests were revised for use as military classification tests and were administered to 1.7 million recruits. Following the war, the army sold thousands of unused test blanks to both educational specialists and the general public (McArthur, 1987).

Through the 1920s and 1930s, objective measurement of intelligence "Swept America, and to some extent Canada, like an educational crusade . . . The critics were numerous but few in comparison to the advocates" (Marks, 1977, p. 10). Testing methodology blossomed as multiple-choice and true-false questions were developed. Statisticians accumulated a variety of estimation procedures, and validity and

reliability standards were established (McArthur, 1987).

In 1929, the first state-wide testing program was initiated in Iowa (Ebel, 1972). The program actually began as a state-wide academic competition in which individual students with high scores went on to district and state competitions for the chance to receive scholarships. In order to participate, all students in the school were required to be tested. The success of the high school program eventually led to the development of the Iowa elementary school tests in the basic skills in 1935.

Through the decades of the 1950s and 1960s, the science of educational testing progressed in a steady fashion. With greater data sets from which to draw, the nation's testing specialists began to analyze scores with greater sophistication. These multiple approaches to educational assessment made tracking of achievement a tool for the evaluation of schools and provided a concrete basis for comparison (Thompson & Sharp, 1983).

Although the trend of more widespread use of achievement testing is still quite prevalent in our society, many have questioned the relative wisdom of our national affection toward testing. Hoffman (1964) has been among the critics who have attacked the uses of mass objective testing and its damaging effects on the vitality of the nation. Hoffman stated that testing was using enormous amounts of the education dollar and justified itself through statistical measure. Mort and Gates (1932) stated that objective tests simply tested the more traditional aspects of the curriculum rather than the newer ones. Further, they concluded that a high test score may not prove good

teaching because the curricula could be narrowed to the elements of the test rather than broader opportunities for learning by students.

Although the arguments for and against standardized testing are not convincing in either direction, the nation began to take notice when studies of declining test scores became apparent in the 1970s. In 1976, Munday presented findings of the achievement scores of students who had taken the Iowa Test of Basic Skills from 1955 to 1975. These 50,000 students, who had taken the test in grades three through eight, yielded a total language score and separate subscores for spelling, capitalization, punctuation, and usage. Munday (1976) found that while these subtest scores improved from 1955 through 1960, test scores began to decline from 1960 through 1965. During the next five years the scores in all subtests declined even more substantially (Munday, 1976).

Also in 1976, Harnischfeger and Wiley conducted research involving the study of the results of several tests given nationwide.

> Generally through the 1940's, 1950's and up to the mid-1960's achievement test scores steadily increased. Since then, test scores have been declining in all tested areas for grades 5 through 12, with more drastic drops occurring in recent years and being most evident for higher grades. The declines have been most pronounced in verbal tests and therein for college-bound females. There is no evidence of decline at younger ages and in lower grades (grades 1, 2, 3, and 4).
>
> The fact that achievements measured in higher grades have declined more than those measured in lower ones reflects differences in content tested as well as the ages of the test-takers. For example, large declines have generally been observed in most verbal-oriented tests, except those given in primary measure decoding, word structure, basic vocabulary and simple comprehension skills, i.e., literacy, while the tests used in later grades are oriented toward comprehension and interpretation of more complex textual materials. The grades (11th and 12th) correspond to those simpler skills measured by standardized tests in elementary schools (Harnischfeger & Wiley, 1976, pp. 6-7).

Although the precise cause of the declining test scores was not determined by any of the numerous reports and studies documenting the decline, these reports set off a flurry of activity in the courts, state legislatures, and federal government to bring about a reversal in the trend. Among the most prominent factors to be studied was the relationship between educational quality and funds expended.

School District Wealth

> Allocating economic resources to education is one of the primary responsibilities of local, state, and federal lawmaking bodies. The procedures and guidelines they have used to determine such allocations in the past have been ambiguous and nonscientific (Garvue, 1969, p. 67).

Historically, the funding of education has been seen as a local function, financed largely through the property tax system. The original public schools in the United States were for the children of paupers who could not afford private schools or tutors. These schools were funded exclusively by local property taxes. This system was fair among local taxpayers, but not equal among communities (Guthrie, Garms, & Pierce, 1978). Recently the emphasis has changed to consideration of school financing as a state responsibility. In 1985, the National Education Association reported that local, state, and federal governments provided 41%, 53%, and 6% of public school district revenues, respectively (Burrup, Brimley, & Garfield, 1988).

The most common method of financing state public education programs is the foundation program formula to distribute basic state school funds (Johns, Morphet, & Alexander, 1983). This program basically proposes equity for taxpayers and adequacy of opportunity for students. The program theoretically requires the taxpayers of the

wealthiest of school districts to be taxed at the same level of effort as those of the poorest districts. Ideally the program would require the "richest" district to provide all of the funds necessary to run a minimum educational program, with no aid from the state. The poorer districts would be guaranteed a combination of state and local funds sufficient to provide for a foundation or minimum program (Burrup et al., 1988). A controversial aspect of the foundation program, the possible provision for the local districts to go beyond the minimum level of educational program by increasing local tax levies to improve programming, was rejected in the concept of educational financing presented by George D. Strayer and Robert M. Haig (Johns et al., 1983). While this model has been adopted by nearly all states, its practical application has been criticized by some.

> The Strayer-Haig approach became the model for numerous State adaptations. Compromises with the strict application of the equalization objective were made in most states to accommodate: (a) the long-standing tradition of flat grants; (b) the reluctance of State officials to increase State taxes to fully finance an equalization plan; and (c) the desire of some localities to finance truly superior public schools. In most states the foundation plan ended up providing the poorest districts with a basic educational program at a level well below that which many school districts willingly supported. Wealthy districts were left without unduly straining local resources. Retention of flat grants as part of most state school financing plans left the wealthiest communities free to forge ahead (Burrup et al., 1988, p. 168).

The single most common determinant in a local district's ability to provide extra funding for educational programs beyond the minimum is local wealth (Guthrie et al., 1978). Property wealth per pupil is the most common independent variable used in the study of equal opportunity concerns (Berne & Stiefel, 1984). Other wealth measures often employed

are total property wealth, per-pupil or per-capita income, and fiscal capacity. All of these measures can be used to assess equity. Since school districts are not uniform in terms of size, area, or any other demographic or geographic factor, it is understandable that any of these measures of wealth would show wide variation among school districts in most states.

The depression years saw the establishment of laws limiting the amount of taxing power of school districts in a number of states (Burrup et al., 1988). Although some states still live with these restrictions, many have been eased since World War II. These limits imposed on local governments for raising local property taxes have caused more of the tax burden to be put on the state for the funding of public schools (Berne & Stiefel, 1984). As this state role has grown, so efforts have increased to ensure accountability by local districts. Such efforts have frequently focused on mandated testing programs.

Cost-Quality Relationship

One of the earliest studies to show a positive relationship between cost and quality in education was completed in 1941 by Mort and Cornell. This study examined the relationship between the level of per-pupil expenditure and the tendency of the school leadership to embrace new educational practices. Mort and Cornell (1941) used several variables to describe the conditions of education in the community. Among these factors were educational level of the parents, occupational levels, social factors, wealth and tax burden, and other financial factors. Of the 67 factors studied, none were more related than the level of expenditure to quality.

Bragg (1960) conducted a study of size-cost relationships in the State of Wisconsin. This study looked at a five-year average of cost per pupil for three different size categories of schools. The findings indicated that there was not enough range in the cost per pupil to adequately determine a relationship between cost and achievement, nor was there a relationship between school size and the achievement of the students studied.

A study of Nebraska high school students (Jantze, 1961) determined that scholastic achievement in the basic school subjects was greatest when per-pupil expenditures were highest, except in some cases where small enrollment resulted in higher per-pupil costs. School size was also found to have a significant positive relationship on student achievement up to the range of 499-799 students, above which the relationship decreased.

In 1966, James Coleman of Johns Hopkins University reported the results of a survey of 570,000 school children, 60,000 teachers, and 41,000 schools. Coleman's objective was to determine the relationship of socioeconomic determinants of educational expenditure to educational outputs. The results of this study indicated that there was a strong relationship between the home and the school. It was concluded that the varied backgrounds of students account for many of the varied results in educational outputs.

> The Coleman report, nevertheless, has received considerable criticism. Reviewers have commented on the absence of a theoretical basis for the study. Others have criticized problems in design, problems in sampling, and debatable approaches to data analysis. Some of the findings and conclusions of the survey, as well, have been at variance with assumptions that previously were widely held. Many of these problems and suggested weaknesses, no doubt, are due

> to the time limit imposed upon the study. Under requirement of the law, it was planned, designed, and conducted in two years. Additionally, within that same time period, data were analyzed and a final report prepared and published. But in spite of these suggested shortcomings, the fact is that the Coleman survey has produced some valuable data related to the general problem area of equality of educational opportunity. Indeed, there are findings from that report which most reviewers feel would stand tests of reanalysis or reinvestigation should the study be replicated or its data subjected to further analysis (Gordon, 1977, pp. 177-178).

Rajpal (1967) examined the relationship between school size and expenditure levels. He divided Iowa school districts into eight size categories, relating student achievement to factors of quality such as composite score on the Iowa Tests of Educational Development, total units in the senior high school curriculum, qualifications of teaching staff, and instructional expenditure. The findings held that total instructional expenditure and per-pupil expenditure had positive and significant relationships with the mean composite scores on the Iowa Tests of Educational Development.

One study (Fritze, 1969) looked at the single output factor of achievement in English as a variable for analysis. The input variables included per-pupil expenditure, student aptitude, and socioeconomic status of the students. There was no significant relationship between per-pupil expenditure and achievement in English. The only independent variable that was significant in predicting achievement in the regression analysis was aptitude.

In a study conducted in Oklahoma (Campbell, 1970), socioeconomic factors, per-pupil expenditures, and school sizes were related to student achievement. For the purpose of reducing school size as a factor in the expenditure-achievement relationship, the school

districts were grouped into two size categories, those with an average daily attendance (ADA) between 500 and 900 and those with an ADA between 950 and 1550. While a positive relationship between expenditure per pupil and achievement scores was not supported by this study, the variables of per-capita income and percent of low income students were each found to be significantly related to academic achievement. The three independent variables combined were thus found to be a good predictor of the dependent variable.

Crone (1974) found, in a study of Illinois high schools, that average income per student, as a socioeconomic factor, did not have a significant relationship to measured outcomes (achievement test scores). Further, Crone's study found no relationship between the size of the high school and student achievement. This study concluded by stating that "the concept of marginal return appears useful in the allocation of educational funds" (p. 1373-A).

While limiting the population to fifth grade students, a study in Mississippi (Hodges, 1975) indicated a correlation of "moderate strength" between expenditure variables and achievement measured in grade equivalents. Selected expenditure variables such as expenditures per pupil in ADA, teachers' salaries, instructional supplies, libraries, Title I, and total instructional costs could be used as predictors of achievement according to the results in this study.

Anderson (1980) attempted to determine if the two trends of rising costs and declining test scores were related. Anderson chose as indicators of educational opportunity per-pupil expenditures for instruction, wealth per pupil unit, the student-teacher ratio, and per-pupil current expense. Multiple correlation techniques were used

to determine a trend of student performance from 1970 through 1978 for grades five and eight in the State of Mississippi. Accordingly, the cost of education in terms of constant dollars was graphed from 1970 through 1978. The popularly held conceptions of declining student performance and rising costs were determined to be incorrect in the State of Mississippi during the decade of the 1970s. Further, it was determined that there was a significant correlation between student performance and per-pupil expenditures for instruction and per-pupil current expense.

A study conducted in the State of Kentucky (Brock, 1986) involved an examination of selected socioeconomic and per-pupil expenditure variables and their relationship to student achievement in reading and mathematics. The two socioeconomic variables used were per-capita personal income and percent of adults age 25 and over who had completed four years of high school. The per-pupil expenditure variables were cost of operating the superintendent's office, individual cost components of the instructional program, total cost of the instructional program, and current operating expenditures. The design used 76 unitary county school districts. The test data were gathered from grades 3, 5, 7, and 10. It was determined that there was a significant relationship between the two socioeconomic variables and student achievement. The level of adult education had a stronger relationship to achievement than did income. Also, those districts that had higher expenditures in the instructional program scored significantly higher than those districts with lower expenditures in that area. In examining those schools which had wide variances in the

amount spent for instructional programs, the gap in achievement appeared to be wider in the elementary than in the high school.

Summary

The historical development of testing has ranged from the first recorded tests in 1115 B. C. through the current trend of widely used standardized tests. Achievement tests have been shown to be the most commonly used measure of educational output. While the reviewed literature indicated an outline of the factors associated with educational outcomes, it also identified the factors related to school district wealth and equity in terms of equal educational opportunity.

Also noted in this chapter was the decline in test scores among America's students during the 1960s and 1970s that brought about the flurry of educational reform. This emphasis on test scores as a measure of achievement, coupled with rising educational costs, has caused researchers to take a strong look at cost-quality factors in our educational system. Those studies cited had attempted to establish a direct relationship between educational quality and cost per pupil. The individual findings did not reveal any consistent pattern in such relationships.

CHAPTER III

METHODOLOGY

The purpose of this research study was to examine the relationship between student achievement and measures of financial support for Oklahoma public schools. Analysis was conducted to determine if there was a significant relationship between student achievement in grades 3, 7, and 10 on the Metropolitan Achievement Test and (1) independent school district revenues per pupil in average daily attendance, (2) the level of local school district wealth as measured by net assessed valuation per pupil in average daily attendance, (3) size of the school district, and (4) the percent of district students who participated in the free lunch program.

This chapter contains the relevant research questions, descriptions of the population and the sample, instrumentation, data collection, and the statistical procedures employed in the data analysis.

The null forms of the basic hypotheses for testing are as follow:

1. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and independent school district revenues per pupil in average daily attendance (ADA).

2. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan

Achievement Test and the level of local school district wealth as measured by net assessed valuation per pupil in average daily attendance.

3. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and the size of the individual school district as measured by average daily attendance.

4. There is no significant relationship between the total school district mean scores for grades 3, 7, and 10 on the Metropolitan Achievement Test and the socioeconomic status of students as measured by the percent of district students who participated in the National School Lunch Program of the individual school districts.

Population and Sample

The population of this study comprised all of the independent school districts in the State of Oklahoma. The 1985-86 Annual Report (Oklahoma State Department of Education, 1986) was used to identify the 456 independent districts. From this source the following data were obtained: (1) revenue per student in average daily attendance, (2) per-capita valuation in average daily attendance, and (3) per-district average daily attendance (ADA). The data representing the percent of free lunch participants were obtained in a special report from the State Department of Education. The data represent the number of free lunch participants approved during the month of October 1985 by individual school districts.

Instrumentation

The inception of the Oklahoma School Testing Program began with House Bill 1480, passed during the 39th Oklahoma Legislative Session, which required the State Department of Education to submit a plan for a statewide assessment of student achievement in the basic skill areas (Oklahoma, 1985a). The plan addressed the following:

1. definitions of various components of the testing program
2. estimated costs of the program
3. grade levels to be tested and timelines for implementation
4. procedures for implementation at the state and school district level
5. suggested tests to be utilized whereby data will be consistent statewide
6. reporting procedures by school districts to the State Department of Education
7. anticipated benefits which can be achieved through the Oklahoma School Testing Program (Oklahoma, 1985b, p. 4).

The Oklahoma State Board of Education was directed by the legislature to recommend one of the following three plans to determine the population to be tested and the method to be utilized:

1. the development of an objectives-based Norm-Referenced Test to be administered to all students in three grade levels based on a three-year phase-in plan
2. the administration of a standardized, norm-referenced test battery to a random sampling of students in three grade levels, based on a one-year phase-in
3. the development of a criterion-referenced test to measure specific learning objectives to be administered to all students in three different grade levels, based on a three-year phase-in in combination with the administration of a standardized, norm-referenced test battery to a random sample of students in the same grade levels each year (Oklahoma, 1985b, p. 4).

After studying the alternatives, the State Board of Education chose to use a standardized, norm-referenced test battery to be administered to all students in grades 3, 7, and 10. On September 16,

1985, a Request for Proposals was developed and released to test publishers nationwide. The proposals were then reviewed by 65 teachers and administrators who were serving grades 3, 7, and 10. These reviewers were not informed of the cost of the individual proposals. Reviewers were to review each proposal using the following criteria:

1. Closeness of match of test items with the Suggested Learner Outcomes.
2. Quality of test items in regard to freedom from ethnic or geographic bias, passage dependency, dependence on knowledge of technical vocabulary, and measurement of higher order thinking skills.
3. Quality of test format in regard to type size, layout, question/answer placement, and appropriateness for the specified grade level.
4. Quality of report formats in regard to their ease of interpretation and use at appropriate levels within the school setting.
5. Quality of manuals for test administrators, test coordinators, and inservice personnel in regard to their use in administering tests, interpreting data, and applying test results for program improvement (Oklahoma, 1986, p. 13).

The test selected by the review committee was the Metropolitan Achievement Test--6th Edition. The Metropolitan Achievement Test is an overall measure of achievement in the basic skills of reading, mathematics, language arts, science, and social studies. The Metropolitan Achievement Test has alternate and equivalent forms L and M. Each equivalent form measures the same subject areas and has the same number of items. The test used in this study was form M.

The third grade test (MAT-6, Elementary Level) includes three reading tests: vocabulary, word recognition skills, and reading comprehension. The three reading tests combine to yield a total score. In the mathematics section, a total domain score is calculated. In the language area, there are two tests: spelling and language, which combine to yield a total language domain score. In addition, this test

assesses abilities in science and social studies. The scores in the five domains will yield a total complete battery score.

The test for seventh grade students (MAT-6, Advanced 1) includes only two reading tests, vocabulary and reading comprehension, which combine the result in a total reading score. The other tests at this level are organized in the same manner as the subtests described for the grade three test.

The test for 10th grade students (MAT-6, Advanced 2) includes two reading tests--vocabulary and reading comprehension, a mathematics test, a spelling test, a language test, a science test, and a social studies test. The reading comprehension and vocabulary tests combine to yield a total reading score. The language and spelling tests combine to yield a total language score. Total basic battery scores and total complete battery scores are also provided based on the test combination described for the elementary and Advanced-1 levels.

The tests were administered during March 11-13, 18-20, and 25-27, 1986. Each school district chose one of these three testing periods based on such factors as spring break and local testing to conclude the nine-week grading period. The Psychological Corporation agreed to refrain from selling or making available samples of the form M test to school districts in the State of Oklahoma prior to the testing dates. In addition to providing the test booklets, the Psychological Corporation provided Test Administration Manuals, Parents' Pre-test Folders for all grades, and Practice Tests for third grade students. The Pre-test Folders and Practice Tests for third grade students were provided prior to the test dates to provide samples of the type of

questions being used on the test. Test administrators were admonished to follow the schedule which is exhibited in Table I (Oklahoma, 1986).

For the purpose of this study, the results used were those reported in the Oklahoma School Testing Program Summary Report: 1986 (Oklahoma, 1986). This report contains the following data summaries:

1. Region Summary State of Oklahoma, Grades 3, 7, and 10
2. Group Item Analysis
3. Administrator's Data Summary
4. Suggested learner Outcome Summary
5. Frequency Distribution
6. List of Averages: these reports list school district results, one each for grades 3, 7, and 10 list school districts in alphabetical order by name of the district. Data include the Number Tested, Mean Raw Score, Mean Scaled Score, Median Grade Equivalent, and National Percentile Rank and Stanine of Mean National Normal Curve Equivalent for each Subtest, Total Basic Battery, and Total Complete Battery. State level summaries, expressed in the same statistics, are provided at the end of each of these grade level report (p. 27).

The 1986 test was administered to students in grades 3, 7, and 10 in all of the 456 independent public school districts in the State of Oklahoma. Of the 456 districts, four districts did not return the tests in time for tabulation. According to each superintendent from the four districts in question, all test data were mailed and were assumed to be lost in transit. Those students who were eligible for special education services and had an Individualized Education Plan (IEP) on file were excluded from taking the test. The number of students enrolled and eligible to be tested and those who actually were administered the test are reported in Table II (Oklahoma, 1986).

Interpretation of data included school district mean scores for grades 3, 7, and 10 from the 456 independent schools. Since none of the dependent school districts in Oklahoma include grade 10, those districts were not included in the population for this study.

TABLE I

METROPOLITAN ACHIEVEMENT TEST
GRADE LEVEL TEST SCHEDULES

Grade Level	Number of Subtests	Preparation Time in Minutes	Testing Time in Minutes	Total Time
3	10	90	254	344
7	9	90	254	334
10	7	90	190	260

TABLE II

NUMBER OF OKLAHOMA PUBLIC SCHOOL STUDENTS ENROLLED
AND TESTED IN THE 1985-86 SCHOOL YEAR

Grade Level	Enrolled Students	Students Tested
3	44,800	40,745
7	44,055	39,609
10	46,022	39,739

The National Percentile Rank was used for the purpose of reporting student achievement scores by school district means according to grade levels. Additionally, each of the subtests of the Metropolitan Achievement Test was scored and a total complete battery score was determined by the average of those scores.

Reported reliability coefficients for the Metropolitan Achievement Test in grades 3, 7, and 10 range from .80 to .98. Alternate-form reliability coefficients and standard error of measurement were obtained from the equating form samples for each test level. Test-retest reliabilities were not deemed necessary. Content validity, criterion-related validity, and construct validity were determined by the authors of the test and are reported in the Preliminary Technical Manual (Psychological Corporation, 1986).

Data Collection

This study compared the relationship between the scores on the Metropolitan Achievement Test and (1) independent school district expenditures per pupil in average daily attendance (ADA), (2) the level of local school district wealth as measured by net assessed valuation per pupil in ADA, (3) the size of the individual school district in ADA, and (4) the percent of district students who participated in the National School Lunch Program. All relevant data were obtained from the 1985-86 Annual Report (Oklahoma State Department of Education, 1986).

The per-pupil revenue data represented the total revenue in dollars per individual public school district divided by the district

average daily attendance. Local wealth data were identified as net assessed valuation per student in average daily attendance. Socioeconomic status was represented by a percentage figure derived by dividing the average the number of approved free lunches served daily by the individual school district during the month of October 1985 and the total district average daily attendance.

Data Analysis

The correlational method of data gathering was used to indicate the degree of relationship between the variables listed in the research questions. The Pearson Product Moment Correlation was used to suggest cause-effect relationship and measured the data against the .05 confidence level. The multiple regression formula was applied to each dependent variable (student achievement) to determine the relationship to the independent variables (measures of wealth).

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The first section of this chapter focuses on the measures of central tendency for both the dependent and the independent variables associated with this study. The second portion will present the results of the Pearson Correlation Coefficient Procedure used to determine the relationships among the different variables. The final segment contains the findings of a multiple regression formula to determine the interactions of the variables.

Measures of Central Tendency

Measures of central tendency were calculated for all dependent and independent variables. The dependent variables were the total school district mean score for the Metropolitan Achievement Test in each of grades 3, 7, and 10. The independent variables were school district revenue per pupil in average daily attendance (ADA), district wealth as measured by net assessed valuation per pupil (ADA), district size (ADA), and socioeconomic status (percent of students participating in the National School Lunch Program).

Measures of central tendency of the dependent variables (achievement scores) are presented in Table III. The difference in the number of cases (districts) is due to the withholding of some schools' scores because of the small number of participants. The State

TABLE III

MEASURES OF CENTRAL TENDENCY REGARDING
THE DEPENDENT VARIABLES

Variables	Scaled Scores		
	MAT 3	MAT 7	MAT 10
Number of Cases	456	442	444
Minimum	542.50	611.80	625.30
Maximum	639.30	679.90	698.50
Mean	592.69	648.61	669.24
Standard Deviation	12.54	22.07	25.69
Median	593.10	647.30	670.55

Department of Education stated that to present the data of a school with less than five students could breach confidentiality of those individuals' scores. Scaled MAT scores were used for the analysis. The MAT 3 scaled scores ranged from a maximum of 639.3 to a minimum of 542.5. The mean was 592.7, which compares to a national mean of 587.1. The MAT 7 scaled scores ranged from a maximum of 679.9 to a minimum of 611.8. The mean was 648.6, which compares to a national mean of 645.6. The MAT 10 scaled scores ranged from a maximum of 698.5 to a minimum of 625.3. The mean was 669.2, which compares to a national mean of 671.3.

The measures of central tendency were also computed for the independent variables, as shown in Table IV. The net assessed valuation per-capita ranged from a maximum of $377,251.15 to a minimum of $2,357.56. The mean was $19,511.42 while the median was $14,119.98. This wide range in per-capita assessed valuation points out the ease with which some districts could raise local funds and the difficulty of such revenue enhancement in other districts. If the district with the largest net assessed valuation per capita raised its tax effort by only one mill, it would be provided with another $377 in revenue per student. However, if the district with the smallest net assessed valuation per capita also raised its tax effort by one mill, only $2.35 per student in additional revenue would be provided.

The district size in average daily attendance ranged from a maximum of 40,529.39 to a minimum of 76.83 for Oklahoma independent school districts. The mean was 1,167.42 students with a median of 440.2. This discrepancy between the mean and the median indicates that a large proportion of Oklahoma districts are relatively small in size.

TABLE IV

MEASURES OF CENTRAL TENDENCY REGARDING
THE INDEPENDENT VARIABLES

Measures	Net Assessed Valuation (per ADA)	District Size (ADA)	Total District Revenue (per ADA)	Percent of Participating in NSLP
Number of Cases	456	456	456	456
Minimum	2357.56	76.83	1789.66	3.9
Maximum	377251.15	40529.39	20127.01	98.4
Mean	10511.42	1167.42	3341.52	32.7
Standard Deviation	21767.65	3134.14	1159.10	18.0
Median	14119.98	440.20	3034.60	

The total district revenue per capita by average daily attendance ranged from a maximum of $20,127.01 to a minimum of $1,789.66. The mean was $3,341.52 with a median $3,034.60. As with the net assessed valuation, district revenue in Oklahoma varies greatly on a per-pupil basis, with the highest income over 10 times that of the lowest.

The percent of students participating in the National School Lunch Program (NSLP) by district ranged from a maximum of 98% to a minimum of 3%. The mean was 32%. This is an extreme disparity, indicating that districts in Oklahoma have great differences in family wealth, as well as in social or cultural factors that affect participation in such programs. Across the state, nearly one third of all Oklahoma school children benefit from the National School Lunch Program.

Analysis of the Hypotheses

The Pearson Correlation Coefficient Procedure was used to determine the relationship between the independent variables (funding factors) and the dependent variables (student achievement). In the four tables that follow, the variables are abbreviated as follows: "valuation" represents the school district net assessed valuation of property per pupil in average daily attendence (ADA); "size" indicates the school district size in total students (ADA); "revenue" means the school districts' annual revenue per pupil (ADA); "socioeconomic" represents the socioeconomic status of the school district's students, as measured by the percent of students participating in the school district's National School Lunch Program; and "MAT 3," "MAT 7," and MAT 10" indicate the school district total mean scores on the Metropolitan

Achievement Test for grades 3, 7, and 10. These data are summarized in Table V.

The correlation coefficients for the variables of size and MAT 3, MAT 7, and MAT 10 were .003, -0.068, and -0.024 respectively. These correlation coefficients determined that the null hypotheses for district size and student achievement should be accepted.

The correlation coefficients for the variables of valuation and and MAT 3, MAT 7, and MAT 10 were .050, .052, and .234 respectively. These correlation coefficients determined that the null hypotheses for property valuation and student achievement should be accepted.

The correlation coefficient for the variables of revenue and MAT 3, MAT 7, and MAT 10 were .041, .035, and -0.009 respectively. These correlation coefficients determined that the null hypotheses for district revenue and student achivement should be accepted.

The correlation coefficient for the variables of socioeconomic and MAT 3, MAT 7, and MAT 10 were -0.048, -0.034, and -0.038 respectively. These correlation coefficients determined that the null hypotheses for the socioeconomic status program and student achievement should be accepted.

The analysis of the statistical findings resulting from the treatment of the major hypotheses found that there is no significant relationship between the revenue per pupil by average daily attendance and the total school district mean in grades 3, 7, and 10 respectively. These correlation coefficients determined that the null hypotheses for the percent of students participating in a free lunch program and student should be accepted.

TABLE V

PEARSON CORRELATION COEFFICIENTS FOR MAT 3, 7, AND 10

	Valuation	Size	Revenue	Socio-economic	MAT 3	MAT 7	MAT 10
Valuation	1.000						
Size	-0.019	1.000					
Revenue	*0.838	-0.140	1.000				
Socio-economic	-0.146	-0.175	0.149	1.000			
MAT 3	0.050	0.003	0.041	-0.048	1.000		
MAT 7	0.052	-0.068	0.035	-0.034	*0.446	1.000	
MAT 10	0.234	-0.024	-0.009	-0.038	*0.442	*0.606	1.000

*Denotes significant relationship

The analysis of the statistical findings resulting from the treatment of the major hypotheses found there is no significant relationship between the revenue per pupil by average daily attendance and the total school district mean in grades 3, 7, and 10 on the Metropolitan Achievement Test. This was found to be true in the achievement test results of the third, seventh, and tenth grade of the school districts studied. Data related to this test are summarized in Table V.

The second hypothesis, dealing with local school district wealth as measured by the net assessed valuation per pupil in average daily attendance and total school district mean in grades 3, 7, and 10 on the Metropolitan Achievement Test, was found to have no significant relationship at the .05 level of confidence. These data are summarized in Table V.

There was no significant relationship found in the third hypothesis, which analyzed the factor of school district size by average daily attendance and the total school district mean in grades 3, 7, and 10 on the Metropolitan Achievement Test for students in the third, seventh, and tenth grade. A summary of these data is found in Table V.

Socioeconomic status, as measured by the percent of district students who participated in the free lunch program, was not found to have a significant relationship with the total district mean in grades 3, 7, and 10 on the Metropolitan Achievement Test. Data related to this test are found in Table V.

Additional Analysis of Data

In order to determine the interactions of the variables, a multiple regression formula was used. Table VI contains the data related to student achievement in grade 3, Table VII contains the data related to student achievement in grade 7, and Table VIII contains the data related to student achievement in grade 10.

Each table (VI, VII, VIII) represents six different combinations of variables. The interaction of valuation and size has a P value of .0512, .0616, and .799 for MAT 3, MAT 7, and MAT 10 respectively. The interaction of valuation and revenue has a P value of .310, .663, and .541 for MAT 3, MAT 7, and MAT 10 respectively. The interaction of valuation and socioeconomic has a P value of .877, .991, and .988 for MAT 3, MAT 7, and MAT 10 respectively.

The interaction of size and revenue has a P value of .345, .102, .379 for MAT 3, MAT 7, and MAT 10 respectively. The interaction of size and socioeconomic has a P value of .293, .446, and .379 for MAT 3, MAT 7, and MAT 10 respectively. The interaction of revenue and socioeconomic has a P value of .209, .519, and .369 for MAT 3, MAT 7, and MAT 10 respectively. The P value for analysis of variance was .636, .654, and .883 for MAT 3, MAT 7, and MAT 10 respectively. No combination of independent variables was found to be significant in predicting the dependent variable at the .05 level of confidence. This statement is true for all three dependent variables of student achievement.

TABLE VI

MULTIPLE REGRESSION INTERACTIONS OF INDEPENDENT VARIABLES TO THE DEPENDENT VARIABLE, MAT 3

Variable	Standard Coefficient	T	P(2 Tail)
Constant	0.000	100.207	0.000
Valuation	-0.160	-0.662	0.508
Size	-0.056	-1.117	0.256
Revenue	0.200	0.882	0.378
Socioeconomic	0.192	1.119	0.264
Valuation to:			
Size	0.154	0.657	0.512
Revenue	0.233	1.017	0.310
Socioeconomic	-0.047	-0.155	0.877
Size to:			
Revenue	1.099	0.945	0.345
Socioeconomic	-0.194	-1.052	0.293
Revenue to:			
Socioeconomic	-0.356	-1.257	0.209

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	1252.063	10	125.206	0.792	0.636
Residual	67647.556	428	158.055		

Dependent Variable: MAT 3
N: 439
Multiple R: .135
Square Multiple R: .018
Adjusted Squared Multiple R: .000
Standard Error of Estimate: 12.57

TABLE VII

MULTIPLE REGRESSION INTERACTIONS OF INDEPENDENT VARIABLES TO THE DEPENDENT VARIABLE, MAT 7

Variable	Standard Coefficient	T	P(2 Tail)
Constant	0.000	130.332	0.000
Valuation	0.199	0.825	0.410
Size	-1.756	-1.847	0.065
Revenue	-0.219	-0.966	0.334
Socioeconomic	-0.137	-0.786	0.433
Valuation to:			
Size	-0.118	-0.502	0.616
Revenue	-0.098	-0.436	0.663
Socioeconomic	-0.003	-0.011	0.991
Size to:			
Revenue	1.910	1.640	0.102
Socioeconomic	-0.140	-0.763	0.446
Revenue to:			
Socioeconomic	0.186	0.646	0.519

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	878.397	10	87.840	0.774	0.654
Residual	48892.449	431	113.440		

Dependent Variable: MAT 7
N: 442
Multiple R: .133
Squared Multiple R: .018
Adjusted Squared Multiple R: .000
Standard Error of Estimate: 10.651

TABLE VIII

MULTIPLE REGRESSION INTERACTIONS OF INDEPENDENT VARIABLES TO THE DEPENDENT VARIABLE, MAT 10

Variable	Standard Coefficient	T	P(2 Tail)
Constant	0.000	137.889	0.000
Valuation	0.020	0.085	0.932
Size	-0.860	-1.912	0.363
Revenue	-0.020	-0.089	0.929
Socioeconomic	-0.170	-0.973	0.331
Valuation to:			
Size	-0.060	-0.255	0.799
Revenue	-0.137	-0.612	0.541
Socioeconomic	-0.005	-0.015	0.988
Size to:			
Revenue	1.032	1.891	0.374
Socioeconomic	-0.160	-0.880	0.379
Revenue to:			
Socioeconomic	0.257	0.899	0.369

Analysis of Variance

Source	Sum-of-Squares	DF	Mean-Square	F-Ratio	P
Regression	560.708	10	56.071	0.510	0.883
Residual	47596.431	433	109.922		

Dependent Variable: MAT 10
N: 444
Multiple R: .108
Squared Multiple R: .012
Adjusted Squared Multiple R: .000
Standard Error of Estimate: 10.484

Summary

The findings of the present study have been presented in Chapter IV. All four null hypotheses of the study were supported at the .05 level of confidence. Additional analysis of data was presented to show the interactions of independent variables of financial support. These interactions failed to show a significant relationship with the dependent variables of student achievement.

CHAPTER V

CONCLUSIONS, RECOMMENDATIONS, AND SUMMARY

The purpose of this research study was to examine the relationship between student achievement and measures of financial support for Oklahoma public schools. Analysis was conducted to determine if there was a significant relationship between student achievement in grades 3, 7, and 10 on the Metropolitan Achievement Test and independent school district revenues per pupil in average daily attendance, level of local school district wealth as measured by net assessed valuation per pupil in average daily attendance, size of the school district in average daily attendance, and the socioeconomic status of students as measured by the percent of district students who participate in the National School Lunch Program of the individual school districts.

The population of this study comprised all of the independent school districts in the State of Oklahoma. The 1985-86 Annual Report (Oklahoma State Department of Education, 1986) was used to identify the 456 independent districts. Financial data relative to the independent variables were obtained from the same source.

A Pearson Correlation Coefficient Procedure was applied to the independent variables of district wealth to determine their relationships to the dependent variables of student achievement (MAT scaled scores in grades 3, 7, and 10). This treatment determined that there was no significant relationship between the independent and the

dependent variables. Four significant relationships were found to exist through the Pearson analysis. However, these were between independent variables and between dependent variables and thus were not combined in the hypotheses. According to the Pearson Correlation Coefficient Procedure, a significant relationship does exist between district wealth as measured by net assessed valuation per pupil in average daily attendance and revenues per pupil by average daily attendance. The correlation coefficient for the two variables was .838. The other three significant relationships were expected, as they represented achievement scores which were related to other achievement scores. The correlation coefficient representing the relationship of the MAT 3 to the MAT 7 was .446. The correlation coefficient representing the relationship between the MAT 3 and the MAT 10 was .442. The correlation coefficient representing the relationship between the MAT 7 and the MAT 10 was .606.

A multiple regression formula was used to determine if there were significant relationships between the four independent variables and those dependent variables of student achievement. None of the combinations of independent variables were found to have a significant relationship on student achievement.

Conclusions

After examination of the findings, the following conclusions are presented:

1. Student achievement, as measured by the Oklahoma Testing Program, was not affected by differences in the level of funding per

pupil in Oklahoma school districts.

2. Student achievement, as measured by the Oklahoma Testing Program, was not affected by differences in the amount of local wealth in district.

3. Student achievement, as measured by the Oklahoma Testing Program, was not affected by differences in the size of the school district.

4. Student achievement, as measured by the Oklahoma School Testing Program, was not affected by differences in the socioeconomic status of the school district's students.

5. The amount of per capita net assessed valuation did have a positive relationship to the total amount of funding a school had available per pupil.

6. Student achievement, as measured by the Oklahoma Testing Program, was not affected by any combination of the funding characteristics studied.

Recommendations for Further Research

1. Since the data used in this study were available for the first time by instituting a statewide testing program, further studies, conducted over a number of years, could examine the relationship between funding changes and student achievement.

2. Further study should be conducted to determine adequate measures of socioeconomic status of pupils in individual school districts. These measures should be used to examine the relationship between the socioeconomic status of students and student achievement.

3. Further study should be conducted to determine the effects of

school size on knowledge obtained in higher level classes in high school.

4. Further study should be conducted to identify the common characteristics of schools that, on standardized tests, score at least one standard deviation above or below the mean of other schools in the state.

5. Measures other than standardized tests should be identified to quantify student achievement and attempts should be made to determine the factors that affect those measures.

Summary

Although this study does not support the premise that student achievement is related to revenues available per-pupil, it would not suggest that significant reductions or increases in funding would not have a significant effect on the educational output of students. At least two other studies (Jantze, 1961; Rajpal, 1967) did show a significant relationship between per pupil expenditures and student output. Although these two studies had positive results, they both differed slightly in their measure of student achievement. Campbell's study (1970) did not show a significant relationship between expenditures per pupil and student achievement in the State of Oklahoma. Perhaps the range of expenditures among the great majority of school districts is too narrow in this state to indicate an adequate variance in data. Additional studies would be needed to assess the implications of extreme funding changes on educational outputs.

Similarly, in the area of local school district wealth as it

relates to student achievement as measured by the Metropolitan Achievement Test, no significant relationship was found between the two variables. In some extreme cases, a school district may have large amounts of revenue available per student when the net assessed valuation per capita is large and the average daily attendance is relatively small. This factor in school finance has long presented questions of both financial equity and equality of opportunity for school students. This question was the thrust of litigation in the preeminent court case of Serrano V. Priest (1971). This study would not support the argument that schools which collect large amounts of local revenue from property taxes are at a significant educational advantage over students in districts with relatively low per-capita valuation.

Size, as measured by average daily attendance, is not related to student achievement in the State of Oklahoma. This agrees with the findings in three studies cited in Chapter II (Bragg, 1960; Rajpal, 1967; Crone, 1974). Many debates have focused on the effect of the size of a school district on student achievement. One outcome of this argument has been support for school consolidation. Although this study does not support the idea, it is not meant to refute the idea either. The measure of student achievement is very limited in this study. Many of the proponents of school district consolidation cite the lack of higher level courses in the small high school. This study may not measure knowledge obtained in such higher level courses due to the age of the population studied (3rd, 7th, and 10th grade students).

The socioeconomic status of students, as measured by the percent of free lunch participants, is not shown to be significantly related to

student achievement in the State of Oklahoma. Although socioeconomic status has been shown to be significantly related to student achievement in other states, it is a difficult measure to define quantitatively. Coleman (1966) led what is probably the most widely accepted study showing a relationship between socioeconomic status and student achievement. Coleman's study examined many characteristics of the home and its relationship to student achievement. However, such characteristics of the home environment were not included in this study. Campbell (1970) did find a significant relationship between socioeconomic status and achievement in students in the State of Oklahoma. The measures used in Campbell's study were per-capita income and percent of low income students. Further studies should refine the basis by which socioeconomic indicators may be measured in the State of Oklahoma. It may be true that school district lines are not "true pockets" of economic homogeneity. In a study conducted in Kentucky (Brock, 1986), two socioeconomic factors, per-capita income and percent of adults over 25 who had completed four years of high school, were found to be significantly related to student achievement. Further studies may want to include other indicators of socioeconomic status such as education of parents, median family income, or job status of parents. Also, socioeconomic status within a school, rather from districtwide, may indicate a stronger relationship between the factors of socioeconomic status and student achievement.

Careful study of the problem of student achievement and funding factors indicates that the Oklahoma legislature has, at times, attempted to simplify the task of providing quality education for the

students of Oklahoma. As in other states, many people in Oklahoma have equated funding with achievement. The Oklahoma legislature mandated the Oklahoma School Testing Program so that educators in Oklahoma could determine the relative standing among the other states in terms of providing quality education. Also discussed, in the legislature, was how the data on student achievement might influence the method of funding for our public schools. There are two fundamental problems with this type of thinking. First, it must be understood that standardized achievement tests are but one method of determining the quality of education received by our public school students and that many other factors should be used to determine the value of an education. Second, the problem with assuming cost/quality relationships is that many studies have determined that the home environment will affect the score on a standardized test more than will factors within the school itself. This study does not report that increased funding would not positively affect the quality of education, but that the barometer for such improvement should be represented by more than a standardized achievement test.

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